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TITLE: SYSTEM FOR THE CONTROL, VERIFICATION AND RECORDING OF THE PERFORMANCE OF A RADIOISOTOPE GENERATOR'S OPERATIONS

Amendment A: CLAIM AMENDMENTS

Claims 1 - 22 (canceled).

23. (New) A system to provide performance control of a radioisotope generator, said system comprising:

a radioisotope generator;

an electronic sensor of elution;

an eluted activity measurement sensor;

means for measuring nuclear quality of the eluted radioisotope;

an electronic memory with information for a user;

a communication interface; and

an user interface software,

wherein the electronic sensor of elution measures changes in high frequency conductometry.

24. (New) A system according to claim 23, wherein said radioisotope generator is a Mo-99 / Tc-99m generator.

25. (New) A system according to claim 23, wherein the eluted activity sensor is comprised of a Geiger Müller tube, a micro ionization chamber or a solid state detector.

26. (New) A system according to claim 23, wherein the electronic memory with information

is comprised of Lot No., Generator No., activity, calibration date and expiration dates.

27. (New) A system according to claim 23, wherein the communication interface uses one or more of the following ports of a PC: RS232, USB, or parallel port.

28. (New) A system according to Claim 24, wherein the means for measuring is comprised of a radioactivity sensor protected by a 3 mm lead shield.

29. (New) A system according to claim 26, wherein the electronic memory is comprised of a non-volatile memory such as EEPROM, the memory, upon connecting to a PC , transferring information stored by a manufacturer specific to a particular generator.

30. (New) A system according to claim 23, wherein user interface software is able to process and log all data introduced from the generator.

31. (New) A system to provide performance control of a radioisotope generator, said system comprising:

a radioisotope generator;

an electronic sensor of elution;

an eluted activity measurement sensor;

means for measuring nuclear quality of the eluted radioisotope;

an electronic memory with information for a user;

a communication interface; and

an user interface software,

wherein the electronic sensor of elution measures changes in photon intensity passing through a portion of elution tubing being transparent to photons.

32. (New) A system according to claim 31, wherein the electronic sensor of elution measures changes in electrical impedance of a portion of elution tubing.

33. (New) A system according to claim 31, wherein the electronic sensor of elution measures changes in dielectric capacity of a portion of elution tubing.

34. (New) A method to detect and measure passage of elution in a radioisotope generator, said method comprising a step from a group consisting of:

using High-frequency conductometry; using Photometry; using Impedanceometry;  
using Electrical capacitometry; using Emitted radiation detection; or using Magnet-hydrodynamic,  
wherein using high frequency conductometry is comprised of measuring changes in electrical  
resistance of a portion of elution tubing of the generator.

35. (New) A method according to claim 34, wherein using impedanceometry is comprised of measuring changes in frequency of a free oscillator or rod-capacitor, a coil surrounding a portion of the elution tubing and a free oscillator being connected to the coil; wherein a frequency counter detects impedance changes of the coil if liquid passes through.

36. (New) A method according to claim 34, wherein using capacitometry is comprised of measuring changes in dielectric capacity, two electrodes being placed externally on both sides of a portion of the elution tubing, the tubing being non-metallic with an external diameter of not more than 2 mm, liquid changing an internal dielectric constant of a capacitor formed by the electrodes and the tubing, a capacitometer being connected to the electrodes measuring changes of capacity when liquid passes through the tubing.

37. (New) A method according to claim 34, wherein using emitted radiation detection is comprised of measuring changes in a radiation field generated by the eluted radioisotope passing through the elution tubing of said radioisotope generator, a properly-shielded-from-other-sources-of-radiation radiation detector being placed against said elution tubing of said radioisotope generator.

38. (New) A method according to claim 34, wherein using magnet-hydrodynamic is

comprised of changes to an orthogonal electric field generated by a magnetic field applied to elution tubing, a magnetic field being applied on a portion of the elution tubing, two electrodes orthogonal to the magnetic field measuring a low electric field that is a function of the liquid flow, and when the liquid passes through the tubing, the electric field increasing and indicating elution.

39. (New) A method according to Claim 34, for measuring dryness of a "dry" Mo-99 / Tc-99m generator, said method further comprising the steps of:

using high frequency conductometry to measure changes in electrical resistance through a column, electrodes being placed on an end and an opposite end of metal tubing or needles of the generator.

40. (New) A method according to Claim 34, for detecting and measuring the radionucleidic purity of the Tc-99m as eluted from a Mo-99 / Tc-99m generator, said method comprising the steps of:

measuring changes in a radiation field generated by eluted radioisotope passing through elution tubing of the radioisotope generator, a second properly-shielded-from-other-sources-of-radiation radiation detector being placed against a 3mm thick lead shield, in direct contact with said elution tubing of said radioisotope generator.

41. (New) A method to transmit the data generated according to Claim 34, further comprising:

transmitting data to a PC or data processor through a RS232 or USB or a parallel port or any other input-output port of a PC.

42. (New) A method to detect and measure passage of elution in a radioisotope generator, said method comprising a step from a group consisting of:

using High-frequency conductometry; using Photometry; using Impedanceometry;

using Electrical capacitometry; using Emitted radiation detection; or using Magnet-hydrodynamic, wherein using photometry is comprised of measuring changes in intensity of a light beam going through a translucent portion of elution tubing, a high intensity light emitter being pointed to the translucent portion of the elution tubing, a phototube/photomultiplier being placed on an other side of the translucent portion of said elution tubing of said radioisotope generator, being directly opposite to the light emitter.

43. (New) A method according to Claim 42, for detecting and measuring the radionucleidic purity of the Tc-99m as eluted from a Mo-99 / Tc-99m generator, said method comprising the steps of:

measuring changes in a radiation field generated by eluted radioisotope passing through elution tubing of the radioisotope generator, a second properly-shielded-from-other-sources-of-radiation radiation detector being placed against a 3mm thick lead shield, in direct contact with said elution tubing of said radioisotope generator.

44. (New) A method to transmit the data generated according to Claim 42, further comprising:

transmitting data to a PC or data processor through a RS232 or USB or a parallel port or any other input-output port of a PC.